



## POST COVID-19 URBANISM: ESTABLISHING MODULAR DIMENSIONS WHEN DESIGNING NEW URBAN SPACES

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**Abstract.** *Because of the global pandemic caused by the COVID-19 virus, many countries around the world are facing the negative consequences of this virus on the health of people. Apart from healthcare, the negative consequences also affect the overall economic and social aspects of the life in the cities. Proposed measures to prevent the spread of the virus include restricting the movement of people in the cities, personal protection and social and physical distancing between people. All this leads to a change in the way cities function as urban centers, the use of buildings and public space. Urbanism and architecture, at the time of the corona virus, have the primary task of organizing the functioning of cities as well as the buildings and spaces in them. This is a challenge for future city planning in order to provide a quality and safe way of life for the residents of the city and the emergence of a new "post COVID-19" urbanism. This paper will present possible solutions for the transformation of urban architectural conditions when designing a given space, specifically through a project for a new modular tourist camp. The solution of the project before the onset of the pandemic will be subject to analysis from the aspect of new dimensioning caused by the recommendations for protection of people. The aim of this paper is to offer modular models in the design of tourist camps by re-dimensioning the micro-urban elements of the camp in the existing dimensioned space. The expected results of this paper will provide an opportunity to apply new modular dimensions of open spaces in order to enable the health safety of citizens and enable the proper functioning of urban spaces.*

**Keywords:** COVID-19, Module, Urbanism

### 1. INTRODUCTION

On 11th Mart 2020, WHO characterizes COVID-19 as a pandemic (WHO, 2020). Countries around the world are facing the negative effects of this virus on the health of people of all ages, from all over the world, from the smallest village to the largest metropolis. Apart from health, the negative consequences also affect the overall economic and social aspects of the states, and thus the life in the cities.

Proposed measures to prevent the spread of the virus include restricting people's movement in cities, personal protection, and social and physical distancing between people (MH-RNM, 2020). All this leads to a change in the way cities function as urban centers, the use of buildings and public space. If at the moment, medical institutions around the world are working to find a vaccine against the virus, we urban planners need to find a module that will be functional and applicable to the transformation of existing and new spaces in the new post-covid19 urbanism.

The shore of Lake Ohrid, with its natural characteristics has very favorable conditions for the development of tourist facilities. Apart from the numerous hotels and resorts along the shores of the lake from the Ohrid and Struga side, from the beginning of the 60s until the 90s, several auto camps were developed: "Autocamp Sv. Naum", "Gradishte", "Eleshec", "Andon Dukov", "Daljan", "AS", "Livadishte" and "Radozda". Since the 1990s, with the beginning of the system's transition, all camps have experienced setbacks and closures. The ownership structure has also changed, but still no development is achieved in that part of tourism. In recent years, there have been initiatives to open small campsites, but they are in a small space and without urban architectural standards.

As the interests of foreign tourists are in the direction of camping, the task is set, to improve the old campsites and build new ones, which will be able to meet all tourist norms.

In this paper, based on the research, a model of a tourist camp is presented that can be adjusted according to the size and shape of the terrain along the entire shore of Lake Ohrid, even on both sides of the lake - the Republic of North Macedonia and the Republic of Albania.

## 2. CONCEPT OF MODULAR MOBILE TOURIST CAMP

The model of the mobile tourist camp is planned to be used in the newly envisaged urban blocks planned for tourism in accordance with the urbanistic plans in RNM. The models are modularly designed with a sized module 6.30 / 6.30 m. for individual residential buildings, and a yard with the same module 6.30 / 6.30. For the module, when designing the model of the mobile tourist camp, is used the dimension of a ship's container with dimensions of 6.06 / 2.44 m. The difference of 24 cm. on the module from 6.06 to 6.30 is used for manipulation when placing the container. In the module from 6.30 / 6.30, 2 containers will be placed -  $2 \times 2.44 = 4.88$ , the difference from 1.42 to 6.30 is used for external porch for both containers. In this module, another types of accommodation can be provided - a bungalow of solid construction, a trailer or a tent. The other module 6.30 / 6.30 is provided for the same tourist mobile unit and will be used as a yard (Fig.1)

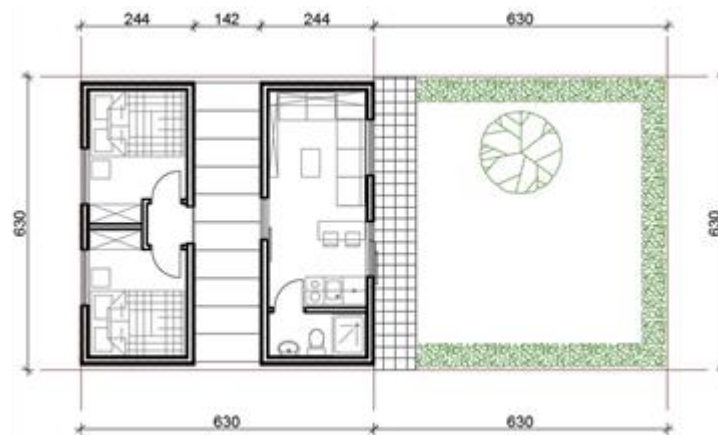


Figure 1 Basic layout of one mobile unit

The individual housing model consists of 2 urban segments. Urban segment 1 is a connecting model in which public space and facilities of the class of purposes B1 - small commercial and business units and public institutions are designed. Urban segment 2 is a model of individual housing of purpose class A1 - family housing in residential houses (Fig.2, 3).

Selected modules:

630/630 cm - object and 630/630 cm - yard

270/630 x N - pedestrian path

900 (630 + 270) / 900 (270 + 630) x N - public space

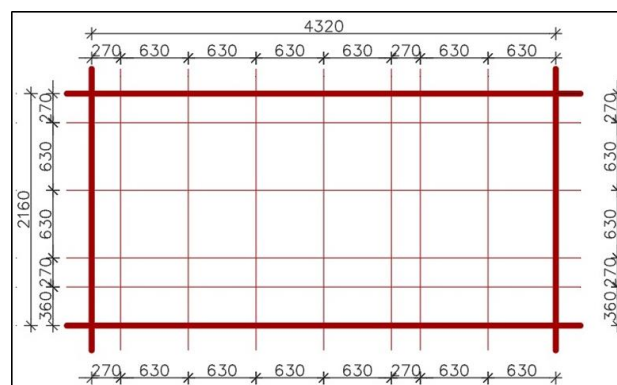
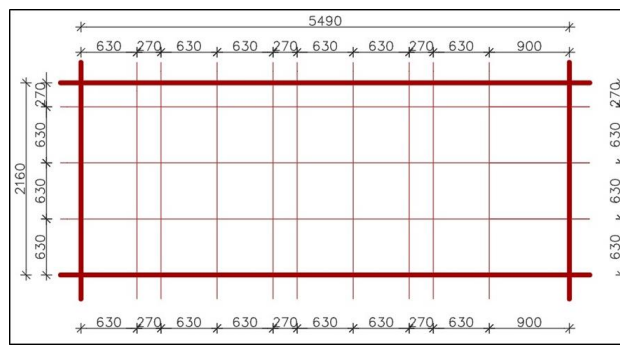
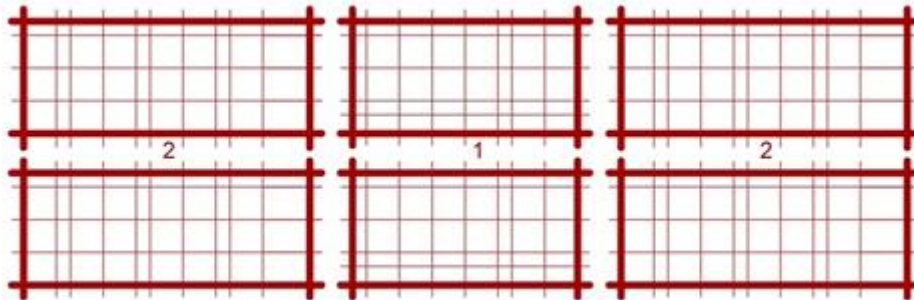


Figure 2 Urban segment 1



**Figure 3** Urban segment 2

The model of a mobile tourist settlement - type of temporary individual housing consists of 6 modules, interconnected. When schematically displacing and setting the two main modules, 3 modules are obtained in a ratio of 2: 1: 2 which are placed horizontally. The other 3 modules are connected and obtained from the main modules by their redistribution and rotation of their functions (Fig.4).



**Figure 4** Schematically displacing of modules

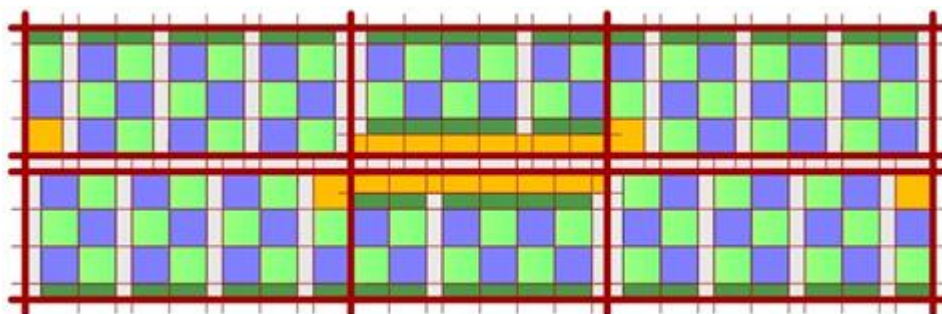
Before designing the project, several conditions were set:

1. The yard should function as an outdoor room, 2. Two adjacent buildings should not be connected to each other, 3. The yard should be connected to the living room, 4. Protective public greenery, 5. Pedestrian access to each building, 6. Designing a street with a special traffic regime, 7. Common parking

Selected modules (Fig.5):

630 / 630 cm – object, 630 / 630 cm – yard, 270 / 630 x N – pedestrian path

900 ( 630 + 270) / 900 (270 + 630) x N – public space



**Figure 5** Schematically displacing of modules

The common area where the public and commercial functions are located is envisaged as a gravitational point for the tourists from the settlement and equipped with urban equipment, greenery and water surfaces, so that the tourists will use that space during the day and in the evening on vacation. The shared parking is divided into two parts located on both sides of the camp, and the space along the camp is intended for a service street for the needs of the camp. This solution also offers the ability to multiply the camp modules on both sides (Fig.6):



Figure 6 Project solution

### 3. NEW MODULAR SOLUTIONS FOR TOURIST CAMP BY RESPECTING COVID-19 VIRUS PROTECTION MEASURES

The concept of the modular solution of the tourist camp remains the same:

- The basic accommodation module - 630/630 cm
- Using your own yard - 630/630 cm
- Module distribution scheme 2: 1: 2
- The dimensions of the camp remain the same - 232/45 m.

The new modular solutions emerge from the prescribed measures to protect against the virus from a minimum distance of 2 m between people, using: pedestrian paths, public areas and parking lots (Fig. 7-10).

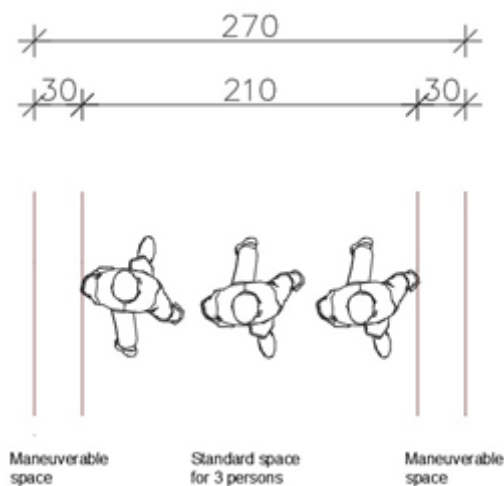


Figure 7 Old dimensions of pedestrian path (before Covid-19)<sup>1</sup>

<sup>1</sup> In this paper, all the dimensions of the urban elements shown are in accordance with Neufert's guidelines

According to prof. Ashraf M. Salama, “Social distancing measures are a vital part of mitigating pandemics. They complement other measures in decreasing the prospect of the spread of disease. The current body of knowledge points out that social distancing is not a new measure to mitigate the spread but has been introduced and practiced during the past several decades” (Salama AM, 2020). At this time, social distancing measures were introduced by the World Health Organization in response to the initially gradual and then exponentially global spread of coronavirus.

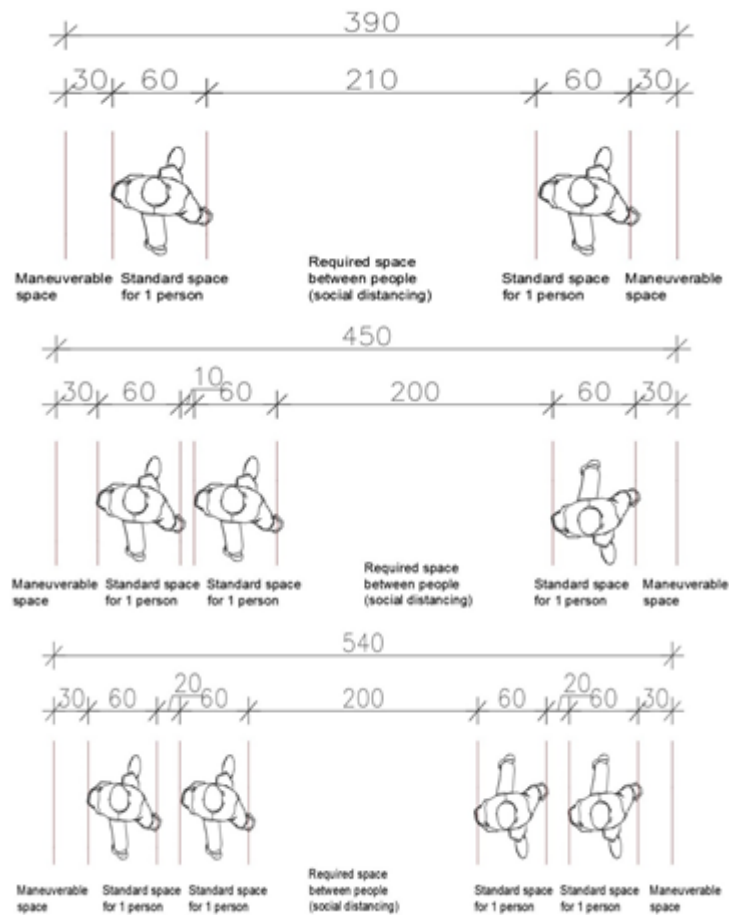
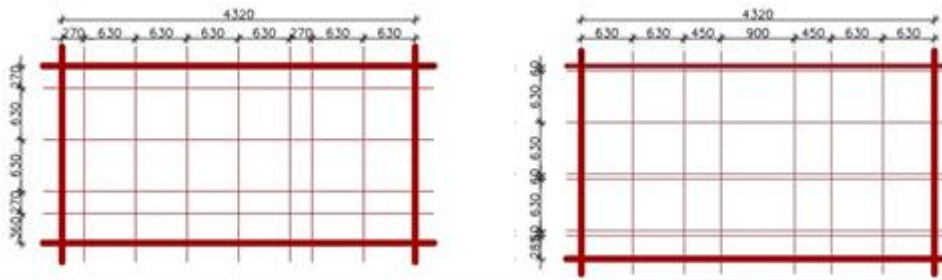


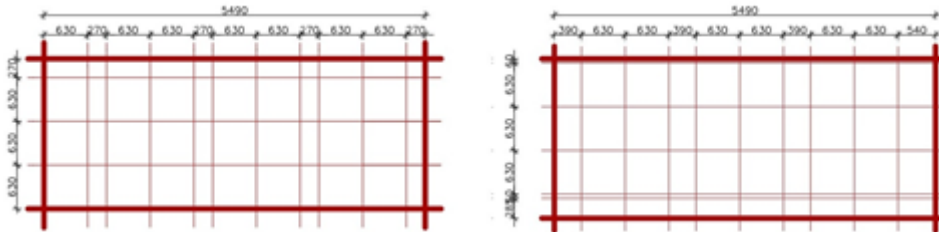
Figure 8,9,10 New dimensions of pedestrian paths (during COVID-19)

In the previous modular solution for urban segment 1, the dimensions of the pedestrian modules are 270 cm wide, while in the new solution, they are 450 cm wide. The urban segment 1, in the previous solution contains 12 accommodation and yard modules, while in the new solution, 10 modules can be accommodated on the same area because larger dimensions are allocated for the public space.



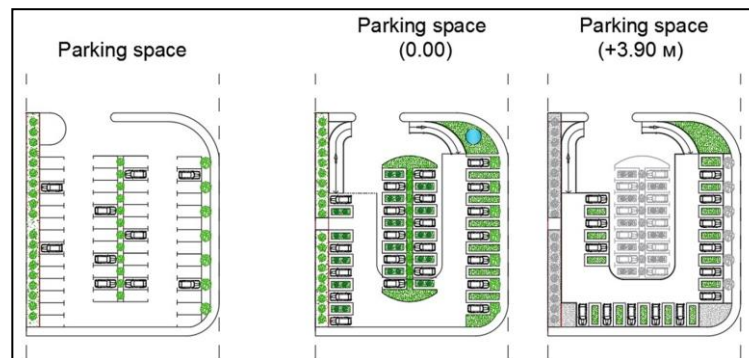
**Figure 11** Old dimensions of modules (left) and New dimensions of modules (right)

In the previous modular solution for urban segment 2, the dimensions of the pedestrian path modules are 270 cm wide, while in the new solution, they are 390 and 540 cm wide. The urban segment 2, in the previous solution contains 21 modules for accommodation and yard, while in the new solution, 18 modules can be placed on the same surface because larger dimensions are allocated for the public space (Fig.12).



**Figure 12** Old dimensions of modules (left) and New dimensions of modules (right)

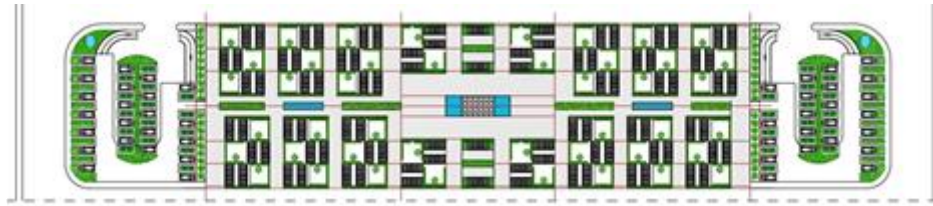
The previous solution on parking space provided for 50 parking spaces. With the new solution, the distance measures between people from 2 meters are respected in the same space. Therefore, that distance between parked vehicles is maintained. The new parking space envisages 22 parking spaces on the ground floor and 14 on the level of +3.90 m. of steel construction (Fig.13).



**Figure 13** Old (left) and new (right) dimensions of parking space

According to the corona protection measures, at the same dimensioned space for a tourist camp are established new modular dimensions for models in the design of this type of facilities. The new modular dimensions provide 36 accommodation units and 12 public and commercial facilities for the needs of camp users. The reduction of

accommodation units results from the increased dimensioning of the public space with the pedestrian and access paths that enable the protection of the people during its use (Fig.14).

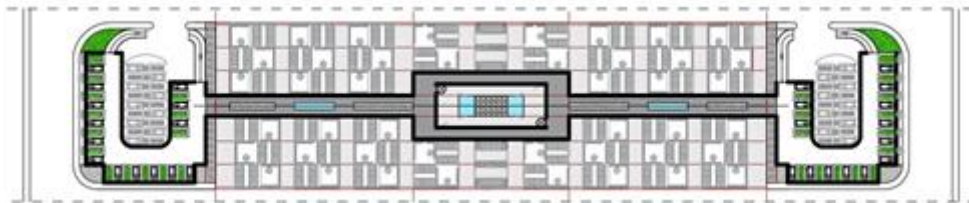


**Figure 14** Final project solution

#### 4. CONCLUSION AND FUTURE DIRECTION: POST COVID-19 URBANISM

The current pandemic raises important questions for future research and practice in our fields of study. Therefore, the development of healthy environments must be central to architecture and urbanism in the future.

This type of modular solutions provide an opportunity for the new design of tourism facilities. Regarding the existing tourist camps, in order to protect the users, an analysis should be made of the possibilities for expansion of the free public areas, the pedestrian paths and the parking lots. If there is no space for expansion, the possibility of designing free areas should be foreseen on the second level (+4.20 m) for the benefit of visitors in order to increase the physical distance between people (Fig.15).



**Figure 15** Second level of the final project solution

The implemented measures for protection of people in this project are through a series of ways for distancing between people for their protection, BUT WITHOUT CAUSING restrictiveness, selectivity and alienation. Therefore, we transform the PHYSICAL and SOCIAL DISTANCE into a HUMAN DISTANCE.

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